

SCIENTIFIC RESEARCH IN SPACE STATION FREEDOM

Space Station Freedom (SSF) is an international venture involving the United States, Europe, Japan and Canada, which will provide orbital research facilities more sophisticated and powerful than anything currently available. It will be capable of being reconfigured over its 30 year lifetime to support a variety of basic and applied research in life, materials and observational sciences. The hot-story modules will be outfitted with equipment ranging from small sub-rack payloads to major facilities such as materials processing furnaces and the 2.5 meter Centrifuge Facility. The most unique aspect of a space-based research laboratory is the weightless environment where gravity driven phenomena such as convection, buoyancy and thermal stratification do not occur. Comparatively weak physical interactions normally masked may prevail, fostering novel physics phenomena. All life has had to deal with gravity in the development of individual organisms and the evolution of species. Every organism sent into space has had its structure and function modified by that experience. On SSF chronic studies of the effect of weightlessness will be conducted on humans and on plants and animals. SSF will also provide a platform for viewing outward and towards Earth as well as the opportunity to study the space environment.

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